



ELECTRIC HIGH-SPEED MULTIPLE UNIT SMILE

Schweizerische Bundesbahnen (SBB), Switzerland

In October 2014, SBB ordered 29 eleven-part EC250 electric multi-system multiple units from Stadler. The multiple units, which SBB has named «Giruno», will travel through the Gotthard Base Tunnel as of 2019, connecting Zurich with Milan, and later Frankfurt with Milan, in record time. The trains have TSI certification and are approved for use in the railway networks of Switzerland, Germany, Italy and Austria. They are used both for conventional lines and on high-speed routes at up to 250 km/h. The platform level entry for platforms with heights of 55 and 76 cm, the pressure-tight, air-conditioned passenger compartments and driver's cabs and the multifunctional and bicycle compartments in the passenger area set new standards for rail travel with regard to comfort. The screens of the digital information system are visible to all passengers. The train has been specifically designed to meet the needs of people with restricted mobility in accordance with the Swiss law on equal rights for persons of restricted mobility.

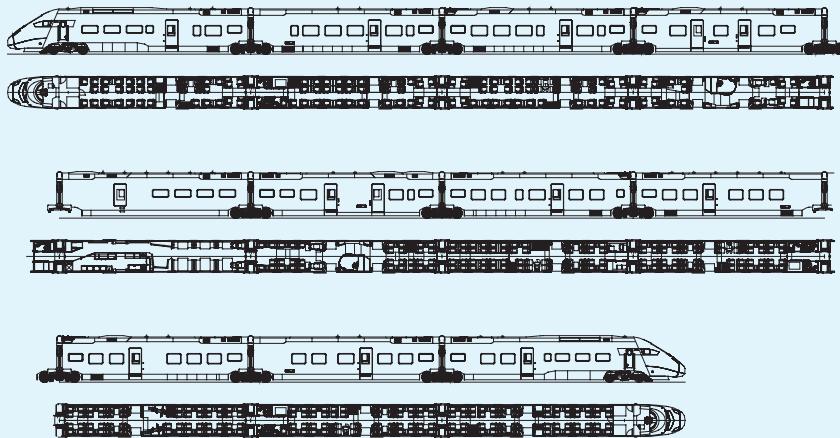
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Technical features

Technology

- Motor bogies and trailer bogies with pneumatic suspension
- Automatic central buffer coupling
- Operation in double traction
- Redundant drive equipment consisting of 4 power trains with 4 traction converters for 4 motor bogies

Comfort

- Low-floor entry at all doors
- Transparent, open interior design
- Pressure-tight, air-conditioned passenger compartments and driver's cab
- Barrier-free vacuum toilet system in low-floor area in both classes
- Toilet areas with one toilet for ladies, one unisex toilet and one urinal
- Unaided boarding for wheelchair users at a platform height of P55 and P76
- Generously dimensioned platform level entrance areas
- Multifunctional and bicycle zones in the passenger compartment
- Comfortable seating for long journeys

Personnel

- Ergonomically and comfortably designed driver's cab to prevent driver fatigue
- Spacious staff compartments and staff toilets for train and dining car personnel

Reliability/Availability/Maintainability/Safety

- Certification in line with TSI for high-speed trains (including monitoring of hot bearing and running dynamics)
- Extended safety concept for use in the Gotthard Base Tunnel (GBT)
- Redundant vehicle control and communication system with train bus and diagnostics computer
- Integral crashworthiness concept

Vehicle data

Customer	SBB AG
Operated networks	approved for CH, DE, IT and AT
Gauge	1435 mm
Designation	RABe 501
Supply voltage	15 kV, 16.7 Hz/25 kV, 50 Hz/3 kV
Axle arrangement	2' Bo' Bo' 2' 2' 2' Bo' Bo' 2' 2' 2'
Number of vehicles	29
Delivery	2019–2021 (Test drives for approval: 2017–2018)
Seating capacity	405 (1 st class 117 / 2 nd class 288)
Dining car seats	17
Floor height	
Low-floor	940 mm
High-floor	1200 mm
Entrance width	900 mm
Axial thrust	1500 kN
Length over coupling	202000 mm
Vehicle width	2900 mm
Vehicle height	4255 mm
Wheelbase	
Motor bogie	2750 mm
Trailer bogie	2700 mm
Driving wheel diameter, new	920 mm
Carrying wheel diameter, new	920 mm
Max. output at wheel	6000 kW
Starting tractive effort	300 kN
Maximum speed	250 km/h